

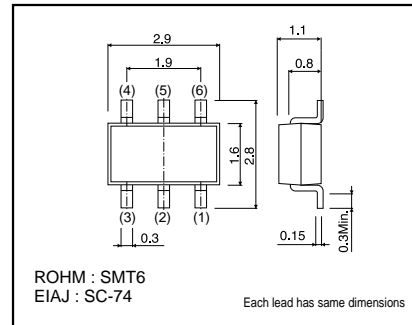
Power management (dual digital transistors)

IMD10A

●Features

- 1) Two digital class transistors in a SMT package.
- 2) Up to 500mA can be driven.
- 3) Low $V_{CE(sat)}$ of drive transistors for low power dissipation.

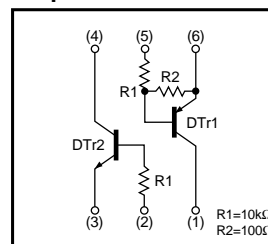
●Dimensions (Unit : mm)



●Package, marking, and packaging specifications

| | |
|------------------------------|--------|
| Part No. | IMD10A |
| Package | SMT6 |
| Marking | D10 |
| Code | T108 |
| Basic ordering unit (pieces) | 3000 |

●Equivalent circuit



●Absolute maximum ratings ($T_a=25^{\circ}C$)

DTr1

| Parameter | Symbol | Limits | Unit |
|-------------------|----------|----------|------|
| Supply voltage | V_{CC} | -50 | V |
| Input voltage | V_{IN} | -5 to +5 | V |
| Collector current | I_c | -500 | mA |

DTr2

| Parameter | Symbol | Limits | Unit |
|---------------------------|-----------|--------|------|
| Collector-base voltage | V_{CBO} | 50 | V |
| Collector-emitter voltage | V_{CEO} | 50 | V |
| Emitter-base voltage | V_{EBO} | 5 | V |
| Collector current | I_c | 100 | mA |

Total

| Parameter | Symbol | Limits | Unit |
|----------------------|-----------|-------------|-------------|
| Power dissipation | P_d | 300(TOTAL) | mW * |
| Junction temperature | T_j | 150 | $^{\circ}C$ |
| Storage temperature | T_{stg} | -55 to +150 | $^{\circ}C$ |

* 200mW per element must not be exceeded.

Transistors

●Electrical characteristics (Ta=25°C)

DTr₁

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|----------------------|---------------------------------|------|------|------|------|--|
| Input voltage | V _{I(off)} | — | — | −0.3 | V | V _{CC} = −5V , I _O = −100μA |
| | V _{I(on)} | −1.5 | — | — | | V _O = −0.3V , I _O = −100mA |
| Output voltage | V _{O(on)} | — | −0.1 | −0.3 | V | I _O = −100mA , I _I = −5mA |
| Input current | I _I | — | — | −25 | mA | V _I = −2V |
| Output current | I _{O(off)} | — | — | −0.5 | μA | V _{CC} = −50V , V _I =0V |
| DC current gain | G _I | 68 | — | — | — | I _O = −100mA , V _O = −5V |
| Transition frequency | f _T | — | 200 | — | MHz | V _{CE} = −10V , I _E =50mA , f=100MHz * |
| Input resistance | R ₁ | 70 | 100 | 130 | Ω | — |
| Resistance ratio | R ₂ / R ₁ | 80 | 100 | 120 | — | — |

* Transition frequency of the device.

DTr₂

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|--------------------------------------|----------------------|------|------|------|------|---|
| Collector-base breakdown voltage | BV _{CB0} | 50 | — | — | V | I _C =50μA |
| Collector-emitter breakdown voltage | BV _{CE0} | 50 | — | — | V | I _C =1mA |
| Emitter-base breakdown voltage | BV _{EB0} | 5 | — | — | V | I _E =50μA |
| Collector cutoff current | I _{CBO} | — | — | 0.5 | μA | V _{CB} =50V |
| Emitter cutoff current | I _{EBO} | — | — | 0.5 | μA | V _{EB} =4V |
| Collector-emitter saturation voltage | V _{CE(sat)} | — | — | 0.3 | V | I _C =10mA , I _B =1mA |
| DC current transfer ratio | h _{FE} | 100 | 250 | 600 | — | V _{CE} =5V , I _C =1mA |
| Transition frequency | f _T | — | 250 | — | MHz | V _{CE} =10V , I _E = −5mA , f=100MHz * |
| Input resistance | R ₁ | 7 | 10 | 13 | kΩ | — |

* Transition frequency of the device.

Transistors

●Electrical characteristic curves

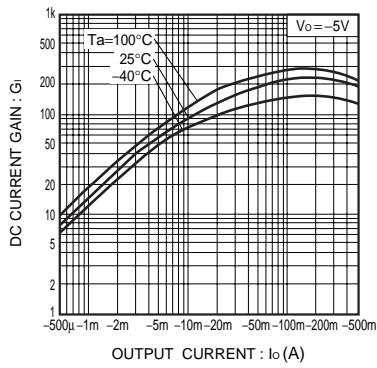


Fig.1 DC current gain vs. Output current characteristics

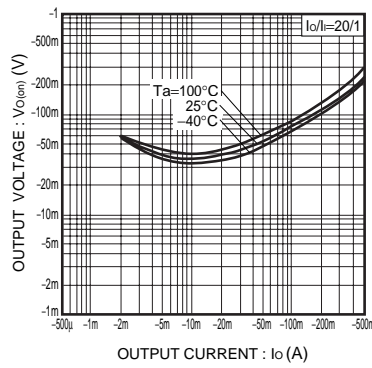


Fig.2 Output voltage vs. Output current characteristics

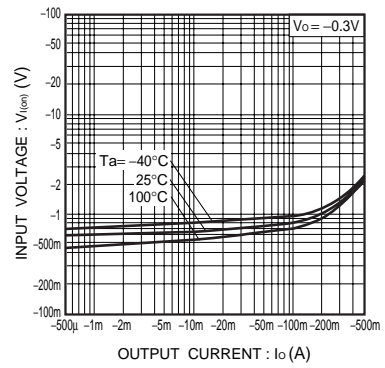


Fig.3 Input voltage vs. Output current (ON characteristics)

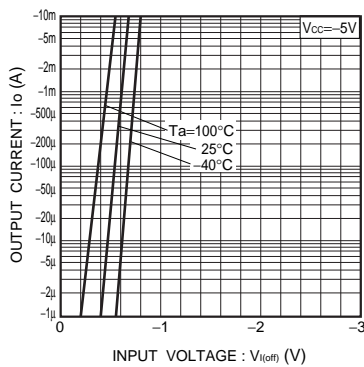


Fig.4 Output current vs. Input voltage (OFF characteristics)

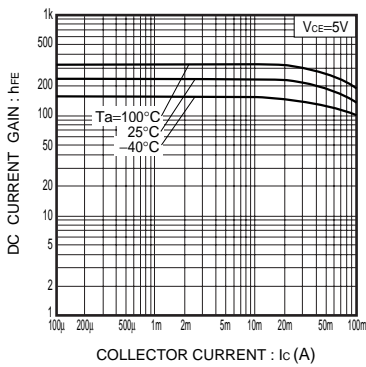


Fig.5 DC current gain vs. Collector current

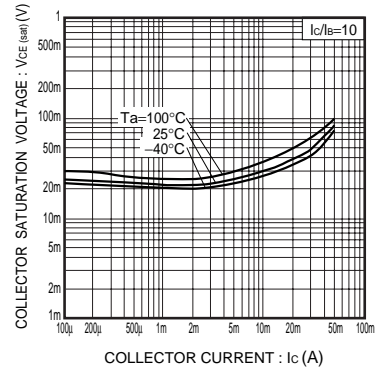


Fig.6 Collector-emitter saturation voltage vs. Collector current

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